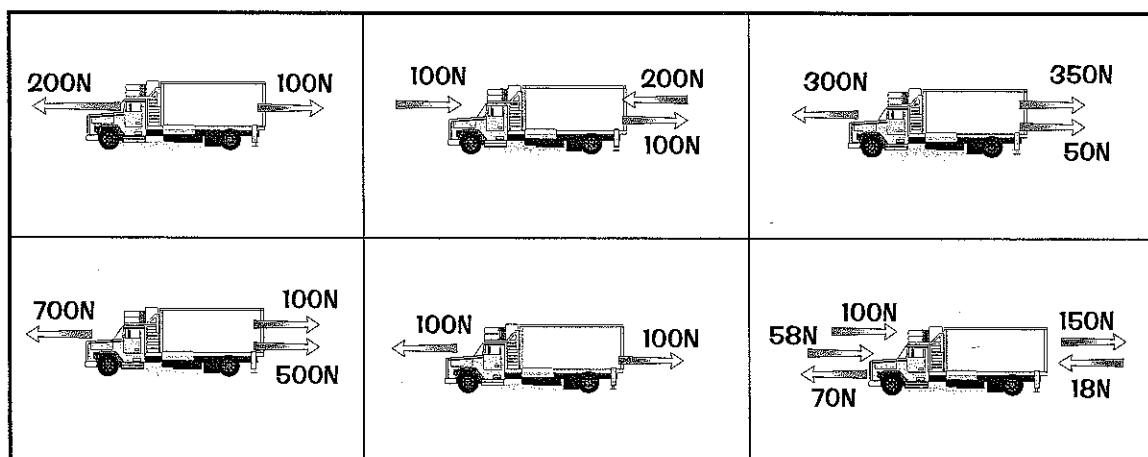


Questions on The Three Laws of Motion

Q1 Newton's First Law of motion is about the idea that balanced forces mean no change in velocity. For each of these sentences write TRUE or FALSE in the space provided.

- a) "balanced forces" means all the forces on an object are in the same direction.
- b) constant speed is the same as constant velocity.
- c) any object moving at a constant velocity has balanced forces on it.
- d) any change in direction is a change in velocity.
- e) an object moving in a curve must have a resultant (unbalanced) force on it.
- f) if forces are balanced they all act in the same direction.
- g) a resultant force is one which is not cancelled by another force.

Q2 Draw a circle around the trucks below, where the forces acting are balanced.



Q3 Newton's Second Law of Motion is all about resultant (unbalanced) forces and acceleration. Complete the following sentences about this law using the list of words in the box below. You may use each word ONCE, MORE THAN ONCE or NOT AT ALL.

overall	unbalanced	m	less	F	acceleration	same	different
accelerate	mass	more	bigger	resultant	a	acceleration	

An _____ force (called a _____ force) ALWAYS causes an object to _____. The _____ happens in the _____ direction as the resultant force, and it's size depends on the size of the force and the _____ of the object. The formula which describes this relationship is:

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}} / \underline{\hspace{2cm}}$$

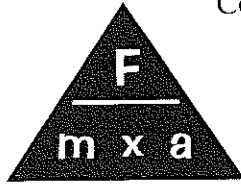
This means that if a force acts on small object, the _____ is _____ than it would be for the same force acting on a large object would. Also, this means that if the mass stays the same, then a bigger force produces a _____ acceleration.

Questions on The Three Laws of Motion

Q4 Circle which of these are forms of acceleration. (There are 5 in total.)

starting	moving at constant speed	changing direction
slowing down	speeding up	being still
	stopping	finishing

Q5 The triangle for working out this sort of thing is shown in the diagram.



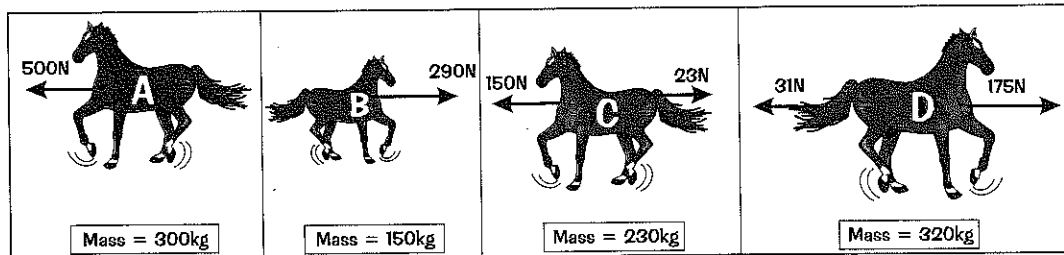
Complete these sentences:

- a) F stands for _____. b) a stands for _____.
 c) m stands for _____. d) increasing F _____ a.
 e) increasing m _____ a.

Q6 Use the formula triangle in Q5 above to complete this table.

Force (N)	Mass (kg)	Acceleration (m/s^2)
	10	5
20		0.5
15	3	

Q7 The pictures A to D show four galloping horses. The horizontal forces are shown.



a) Work out the resultant force acting on:

Horse A Horse B

Horse C Horse D

b) Work out the acceleration of:

Horse A Horse B

Horse C Horse D

Q8 Newton's Third Law of motion states that if object A exerts a force on object B, then object B exerts an equal and opposite force on object A.

The hand in the diagram opposite is pulling a car on a rope. Draw and label an arrow on the diagram to show the force exerted by the rope on the hand.

